

In the Claims

The following is a complete listing of the claims and replace all prior claims in the application:

- 1 1. A hard disk drive (HDD) enclosure comprising:
2 a metal housing adapted to couple to and substantially enclose HDD components, the
3 metal housing having sidewalls extending upward from a lower base having an opening
4 therein, an upper portion of the sidewalls defining an opening through which the HDD
5 components fit into the metal housing;
6 a feedthrough arrangement having a flange in the opening in the lower base and
7 hermetically sealing the opening, the feedthrough arrangement including with a plurality of
8 connectors extending through the flange, each connector forming a hermetic seal with the
9 flange and adapted to pass electrical signals between the HDD components and a circuit
10 outside of the metal housing; ~~and~~
11 an inside cover disposed between the sidewalls of the housing and within a flange of
12 the housing, a non-hermetic seal being formed between the flange and the inside cover; and
13 a metal cover laser welded to the upper portion of the sidewalls to close the opening
14 through which the HDD components fit and hermetically sealing the metal housing.
- 1 2. The HDD enclosure of claim 1, further comprising a gas sealed in the metal
2 housing and including at least one of: a low density gas and a low-humidity gas.
- 1 3. (Canceled)

1 4. (Currently Amended) The HDD enclosure of claim [[3]] 1, further
2 comprising an adhesive configured and arranged to couple the inside cover to the metal cover
3 and to hold the metal cover in place during a laser welding process for welding the metal
4 cover to the metal housing.

1 5. The HDD enclosure of claim 4, further comprising a damping plate coupled to
2 the metal cover and configured and arranged to dampen vibration from an HDD in the metal
3 housing.

1 6. The HDD enclosure of claim 1, wherein at least one of the metal housing and
2 the metal cover is includes a substantially eutectic aluminum/silicon alloy.

1 7. The HDD enclosure of claim 6, wherein the metal housing is a substantially
2 eutectic aluminum/silicon alloy that, upon laser welding to the metal cover, solidifies after
3 the laser-welded portion of the metal cover solidifies.

1 8. The HDD enclosure of claim 1, wherein the lower base and the sidewalls are
2 formed using at least one of: cold forging and die casting.

1 9. The HDD enclosure of claim 1, wherein the metal housing is cold forged
2 Aluminum.

1 10. The HDD enclosure of claim 9, wherein the metal housing includes material
2 selected from the group of: 6061 Aluminum and 6063 Aluminum.

1 11. The HDD enclosure of claim 10, wherein the metal cover is 4047 Aluminum.

1 12. The HDD enclosure of claim 1, wherein the metal housing is die-cast
2 Aluminum.

1 13. The HDD enclosure of claim 12, wherein the die-cast Aluminum includes at
2 least one of: A413 Aluminum and 413 Aluminum.

1 14. The HDD enclosure of claim 13, wherein the metal cover includes at least one
2 of: 4047 Aluminum and 6061 Aluminum.

1 15. The HDD enclosure of claim 1, wherein the feedthrough flange is soldered to
2 the metal housing.

1 16. The HDD enclosure of claim 1, wherein the feedthrough flange is laser
2 welded to the metal housing.

1 17. The HDD enclosure of claim 1, wherein the feedthrough flange and the metal
2 housing have substantially similar expansion coefficients.

1 18. (Currently Amended) The HDD enclosure of claim 1, further comprising a
2 temperature sensor circuit configured and arranged to detect the temperature in the metal
3 housing and to adjust ~~operational parameters~~ operation of the HDD ~~as a function of~~ based on
4 the detected temperature.

1 19. The HDD enclosure of claim 1, wherein at least one of the feedthrough
2 connectors, feedthrough flange and metal housing is plated.

1 20. The HDD enclosure of Claim 1, wherein the metal housing includes at least
2 one fastener arrangement adapted to couple HDD components to the metal housing and
3 completely within the metal housing.

1 21. (Currently Amended) A sealed electronic device enclosure comprising:
2 a metal housing coupled to and substantially enclosing the electronic device at an
3 interior surface thereof and having a feedthrough opening therein, the interior surface
4 including material selected from the group of: cold forged Aluminum and die cast
5 Aluminum;
6 a feedthrough arrangement extending through the feedthrough opening in the metal
7 housing and adapted to pass electrical signals between the electronic device and a circuit
8 outside of the metal housing, the feedthrough arrangement having a metal flange coupled to
9 the metal housing and hermetically sealing the feedthrough opening;
10 an inside cover disposed between the sidewalls of the housing and within a flange of
11 the housing, a non-hermetic seal being formed between the flange and the inside cover;
12 a metal cover laser welded to the metal housing and
13 a low-humidity gas sealed in the metal housing by the feedthrough arrangement and
14 the metal cover.

1 22. The sealed electronic device enclosure of claim 21, wherein metal housing
2 includes a eutectic aluminum alloy.

1 23. (Canceled)

1 24. (Currently Amended) The sealed electronic device enclosure of claim [[23]]

2 21, further comprising wherein a low-density gas is sealed in the metal housing ~~to reduce~~

3 ~~disturbance of an HDD head flying near an HDD disk surface, relative to the disturbance that~~

4 ~~would exist with standard pressure air sealed in the metal housing.~~

1 25. (Currently Amended) A hermetically-sealed hard disk drive (HDD)
2 arrangement comprising:
3 a metal housing adapted to couple to and substantially enclose HDD components,
4 with sidewalls extending upward from a lower base having an opening therein, an upper
5 portion of the sidewalls defining an opening through which the HDD fits into the metal
6 housing;
7 HDD components fastened to the metal housing;
8 a feedthrough arrangement having a flange in the opening of the lower base and
9 forming a hermetic seal therewith, the feedthrough arrangement including ~~with~~ a plurality of
10 connectors extending through the flange, each connector forming a hermetic seal with the
11 flange and adapted to pass electrical signals between the HDD components and a circuit
12 outside of the metal housing;
13 ~~a first cover over and enclosing the HDD components in the metal housing;~~
14 ~~a non-hermetic seal between the first cover and the housing and adapted to seal the~~
15 ~~HDD components in the housing; and~~
16 an inside cover disposed between the sidewalls of the housing and within a flange of
17 the housing, a non-hermetic seal being formed between the flange and the inside cover; and
18 a metal cover over the first cover, laser welded to an upper portion of the sidewalls
19 and hermetically sealing the upper portion of the housing, at least a portion of the laser
20 welded metal cover and metal housing including a substantially eutectic aluminum-silicon
21 alloy.

1 26. (Currently Amended) A computer system comprising:
2 a central processor;
3 HDD components sealed in a metal housing adapted to couple to and enclose the
4 HDD components in a low-humidity gas environment, the metal housing having sidewalls
5 extending upward from a lower base, the HDD components being non-hermetically sealed by
6 a first cover disposed between the sidewalls of the metal housing, wherein the first cover
7 inside the metal housing is disposed within a flange and a non-hermetic seal being formed
8 between the flange and the inside cover, and a metal cover being laser welded to an upper
9 portion of the sidewalls to hermetically seal the metal cover to the sidewalls;
10 a communications link coupled and adapted to pass signals between the processor and
11 the HDD; ~~and~~
12 an inside cover disposed between the sidewalls of the housing and within a flange of
13 the housing, a non-hermetic seal being formed between the flange and the inside cover; and
14 a feedthrough arrangement extending through the metal housing and configured and
15 arranged to pass signals between the HDD components and the communications link, the
16 feedthrough arrangement having a flange coupled to an opening in the lower base of the
17 metal housing and forming a hermetic seal therewith, the feedthrough arrangement including
18 ~~with~~ a plurality of connectors extending through the flange, each connector forming a
19 hermetic seal with the flange and adapted to pass the signals through the metal housing.

1 27. (Currently Amended) A method for manufacturing a hard disk drive (HDD)
2 enclosure, the method comprising:
3 forming a metal housing adapted to couple to and substantially enclose an HDD, with
4 sidewalls extending upward from a lower base having an opening therein, and with an upper
5 portion of the sidewalls defining an opening through which the HDD fits into the metal
6 housing;
7 coupling a flange of a feedthrough arrangement to the opening of the lower base and
8 forming a hermetic seal therewith, the feedthrough arrangement having a plurality of
9 connectors extending through the flange, each connector forming a hermetic seal with the
10 flange and adapted to pass electrical signals between the inside and outside of the metal
11 housing;
12 inserting a HDD components into the metal housing, fastening the HDD components
13 to the metal housing and connecting the HDD components to the plurality of connectors; ~~and~~
14 providing an inside cover disposed between the sidewalls of the housing and within a
15 flange of the housing, a non-hermetic seal being formed between the flange and the inside
16 cover; and
17 laser welding a metal cover to an upper portion of the sidewalls to seal the open upper
18 portion of the metal housing, the metal cover and the feedthrough arrangement hermetically
19 sealing the HDD components in the metal housing.

1 28. The method of claim 27, wherein forming a metal housing includes at least
2 one of: cold forming a metal housing and die casting a metal housing.

1 29. (Currently Amended) The method of claim 27, ~~further comprising coupling a~~
2 ~~first cover over the HDD components and between the sidewalls and~~ wherein welding a
3 metal cover to an upper portion of the sidewalls includes adhering the metal cover to the first
4 cover to hold the metal cover in place while subsequently welding the metal cover to the
5 upper portion of the sidewalls.

1 30. The method of claim 27, wherein welding a metal cover to an upper portion of
2 the sidewalls includes welding a metal cover including a metal having a composition that is
3 substantially a eutectic alloy of aluminum and silicon.

1 31. The method of claim 30, wherein welding the metal cover to an upper portion
2 of the sidewalls includes laser welding the metal cover to the sidewalls by directing a laser to
3 surfaces of both the metal cover and the sidewalls.

1 32. The method of claim 31, wherein laser welding the metal cover to the
2 sidewalls includes directing the laser beam to a junction between the metal cover and the
3 sidewalls with a majority of the laser beam impinging upon the sidewalls, heating the
4 sidewalls more than the metal cover and inhibiting the welded portion of the sidewalls from
5 solidifying until after the metal cover solidifies.

1 33. The method of claim 27, further comprising:
2 sealing a gas consisting primarily of at least one of Helium, Hydrogen and Methane
3 in the metal housing with the metal cover and the feedthrough arrangement.

- 1 34. The method of claim 27, further comprising:
- 2 sealing air in the metal housing with the metal cover and the feedthrough arrangement
- 3 at a vacuum pressure of less than about $\frac{1}{2}$ atmosphere.